

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. A detector for sensing variations in properties of a fluid flowing in a boundary layer adjacent to the detector, the detector comprising an optical waveguide having a core layer covered by a cladding layer defining a planar surface with an optical grating pattern thereon, whereby when a beam of laser light is directed through the detector as an input, variations in an output of the beam of laser light are indicative changes in fluid pressure or density in the boundary layer adjacent to the grating of the optical waveguide.
2. A detector according to claim 1 wherein the optical waveguide is an optical fiber with a D-shaped cross section defining a planar surface and wherein the core is adjacent to the planar surface and the grating is formed in the cladding.
3. A detector according to claim 2 wherein the grating has a first portion and a second portion, the second portion being spaced from the first portion by a selected distance.
4. A detector according to claim 2 wherein the optical grating pattern is slanted at an angle with respect to the planar surface of the fiber.
5. A detector according to claim 4 wherein the angle is 45°.
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. A method for sensing variations in properties of a fluid flowing in a boundary layer adjacent to a detector, the method comprising:

directing a beam of laser light through an optical waveguide having a core layer covered by a cladding layer and defining a planar surface with an optical grating pattern thereon, and detecting variations in an output of the beam of laser light indicative changes in fluid pressure or density in the boundary layer adjacent to the grating of the optical waveguide.

14. A method according to claim 13 wherein the optical waveguide is an optical fiber with a D-shaped cross section and wherein the core is adjacent to the planar surface and the grating pattern is formed in the cladding.

15. A method according to claim 14 wherein the grating pattern has a first portion and a second portion, the second portion being spaced from the first portion by a selected distance.

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)